

# PATENT COOPERATION TREATY

## PCT

### INTERNATIONAL PRELIMINARY REPORT ON PATENTABILITY

(Chapter II of the Patent Cooperation Treaty)

(PCT Article 36 and Rule 70)

REC'D 20 MAR 2006

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Applicant's or agent's file reference PA136146/PCT	<b>FOR FURTHER ACTION</b>		See Form PCT/IPEA/416
International application No. PCT/IB2005/000056	International filing date (day/month/year) 13.01.2005	Priority date (day/month/year) 15.01.2004	
International Patent Classification (IPC) or national classification and IPC C09K3/14			
Applicant ELEMENT SIX LIMITED			

- This report is the international preliminary examination report, established by this International Preliminary Examining Authority under Article 35 and transmitted to the applicant according to Article 36.
- This REPORT consists of a total of 5 sheets, including this cover sheet.
- This report is also accompanied by ANNEXES, comprising:
  - ☒ sent to the applicant and to the International Bureau) a total of 1 sheets, as follows:
    - ☒ sheets of the description, claims and/or drawings which have been amended and are the basis of this report and/or sheets containing rectifications authorized by this Authority (see Rule 70.16 and Section 607 of the Administrative Instructions).
    - ☐ sheets which supersede earlier sheets, but which this Authority considers contain an amendment that goes beyond the disclosure in the international application as filed, as indicated in item 4 of Box No. I and the Supplemental Box.
  - ☐ (sent to the International Bureau only) a total of (indicate type and number of electronic carrier(s)) , containing a sequence listing and/or tables related thereto, in computer readable form only, as indicated in the Supplemental Box Relating to Sequence Listing (see Section 802 of the Administrative Instructions).

- This report contains indications relating to the following items:

- ☒ Box No. I Basis of the opinion
- ☐ Box No. II Priority
- ☐ Box No. III Non-establishment of opinion with regard to novelty, inventive step and industrial applicability
- ☐ Box No. IV Lack of unity of invention
- ☒ Box No. V Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement
- ☐ Box No. VI Certain documents cited
- ☐ Box No. VII Certain defects in the international application
- ☐ Box No. VIII Certain observations on the international application

Date of submission of the demand 11.11.2005	Date of completion of this report 21.03.2006
Name and mailing address of the international preliminary examining authority:  European Patent Office - P.B. 5818 Patentlaan 2 NL-2280 HV Rijswijk - Pays Bas Tel. +31 70 340 - 2040 Tx: 31 651 epo nl Fax: +31 70 340 - 3016	Authorized Officer Lehnert, A Telephone No. +31 70 340-4234 

**INTERNATIONAL PRELIMINARY REPORT  
ON PATENTABILITY**

International application No.  
PCT/IB2005/000056

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**Box No. I Basis of the report**

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1. With regard to the **language**, this report is based on the international application in the language in which it was filed, unless otherwise indicated under this item.
- ☐ This report is based on translations from the original language into the following language , which is the language of a translation furnished for the purposes of:
- ☐ international search (under Rules 12.3 and 23.1(b))
  - ☐ publication of the international application (under Rule 12.4)
  - ☐ international preliminary examination (under Rules 55.2 and/or 55.3)
2. With regard to the **elements**\* of the international application, this report is based on *(replacement sheets which have been furnished to the receiving Office in response to an invitation under Article 14 are referred to in this report as "originally filed" and are not annexed to this report):*

**Description, Pages**

1-8 as originally filed

**Claims, Numbers**

1-6 received on 12.01.2006 with letter of 12.01.2006

- ☐ a sequence listing and/or any related table(s) - see Supplemental Box Relating to Sequence Listing
3. ☐ The amendments have resulted in the cancellation of:
- ☐ the description, pages
  - ☐ the claims, Nos.
  - ☐ the drawings, sheets/figs
  - ☐ the sequence listing (*specify*):
  - ☐ any table(s) related to sequence listing (*specify*):
4. ☐ This report has been established as if (some of) the amendments annexed to this report and listed below had not been made, since they have been considered to go beyond the disclosure as filed, as indicated in the Supplemental Box (Rule 70.2(c)).
- ☐ the description, pages
  - ☐ the claims, Nos.
  - ☐ the drawings, sheets/figs
  - ☐ the sequence listing (*specify*):
  - ☐ any table(s) related to sequence listing (*specify*):

\* If item 4 applies, some or all of these sheets may be marked "superseded."

**INTERNATIONAL PRELIMINARY REPORT  
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International application No.  
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**Box No. V Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement**

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1. Statement

Novelty (N)	Yes: Claims	1-6
	No: Claims	
Inventive step (IS)	Yes: Claims	1-6
	No: Claims	
Industrial applicability (IA)	Yes: Claims	1-6
	No: Claims	

2. Citations and explanations (Rule 70.7):

**see separate sheet**

**Re Item V.**

- 1 Reference is made to the following document:

D1 : US 5 024 680 A (CHEN ET AL) 18 June 1991 (1991-06-18)

2 INDEPENDENT CLAIM 1, NOVELTY

- 2.1 The present application meets the criteria of Article 33(1) PCT, because the subject-matter of claims 1-7 as amended with letter of 12.01.2006 is novel in the sense of Article 33(2) PCT.

Document D1 discloses (see claims 1-6) coated diamond particles, having a first layer of chromium carbide, a second layer of tungsten, tantalum, or molybdenum. The second layer of tungsten may be applied by coating with chemical vapour deposition; physical vapour deposition may also be used to apply the tungsten coating (see column 6, lines 56 and 57).

There is no disclosure in D1 that the outer tungsten layer is not carbided. Moreover, the tungsten layer is at least partially carbided as the applicant pointed out correctly in his letter of 12.01.2006 (see D1, column 7, lines 8 to 10).

2.2 INDEPENDENT CLAIM 1, INVENTIVE STEP

The present application meets the criteria of Article 33(1) PCT, because the subject-matter of claims 1-7 as amended with letter of 12.01.2006 contains an inventive step in the sense of Article 33(3) PCT.

Document D1 which is regarded as the closest prior art because it contains the same layer structure as claimed by the applicant in claim 1 discloses (see claims 1-6) coated diamond particles, having a first layer of chromium carbide, a second layer of tungsten, tantalum, or molybdenum. The second layer of tungsten may be applied by coating with chemical vapour deposition; physical vapour deposition may also be used to apply the tungsten coating (see column 6, lines 56 and 57).

The difference with the application, claim 1 is that the tungsten layer is not carbided.

The technical effect related to this difference is that the tungsten forms a barrier to protect the inner layer and substrate (see description of the application, page 3, next to last paragraph and page 4, last paragraph).

There is no indication in the prior art that a non-carbided tungsten coating might be used to protect the inner layer of a layered superabrasive.

Thus, it would not be obvious for the skilled person to choose this combination and the subject-matter of independent claim 1 is inventive.

### 2.3 DEPENDENT CLAIMS 2-6

Claims 2-6 contain all the features of claim 1 and are dependent on claim 1 and thus meet the requirements of the PCT in respect of novelty and inventive step (Article 33(2) and (3) PCT).